



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,129	01/28/2004	Yoshiyuki Shibahara	HITA.0500	2247
7590	02/09/2005		EXAMINER COX, CASSANDRA F	
REED SMITH LLP Suite 1400 3110 Fairview Park Drive Falls Church, VA 22042			ART UNIT 2816	PAPER NUMBER

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/765,129	SHIBAHARA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Cassandra Cox	2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 28 January 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13 and 17 is/are rejected.
- 7) Claim(s) 14-16 and 18-20 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 01/28/04.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the digital filter for shaping the baseband signal into a prescribed signal waveform and a digital/analog converter must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-4 and 12 are indefinite because the claims are misdescriptive. The claims refer to a charge pump (and/or a control circuit) and a loop bandwidth selector as being separate elements. It appears to the examiner from review of the specification, drawings, and further clarification by attorney Marquez on 02/03/05 that the loop bandwidth selector is a combination of the charge pump and the control circuit. In addition, claim 4 is indefinite because it appears to the examiner that the variable charge pump circuit in the claim is the same as the charge pump previously claimed in claim 1. Correction or clarification is required.

Claims 5-11 are also rejected due to the limitations of the base claim and any intervening claims.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4, 13, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Dent (U.S. Patent No. 5,834,987).

In reference to claim 1, Dent discloses in Figure 6 a phase locked loop comprising: a phase-frequency detector (100) that detects a phase difference between a reference signal (FREF) introduced into a first input terminal and an input signal introduced into a second input terminal, and that generates output pulses according to the phase difference; a charge pump (not shown but disclosed in column 3, lines 37-40) that outputs electric current according to an output signal from the phase-frequency detector (100); a loop filter (102) that attenuates a charge pump output of the charge pump; a voltage controlled oscillator (104) in which the frequency of an oscillator output signal is controlled according to an output voltage of the loop filter (102); a programmable divider (106) which divides the oscillator output signal from the voltage-controlled oscillator (104) according to an input division number data and feeds it back to the second input terminal of the phase-frequency detector (100), a first modulator (120, 121, 122) that transforms an incoming baseband (DATA) signal into an integer signal for specifying a division number and that sends the integer signal to a control terminal of the programmable divider (106); a second modulator (120, 121, 122, 124)

which shapes the incoming baseband signal (DATA) into a prescribed signal waveform and sends it to the voltage controlled oscillator (104, see column 7, lines 6-12); and a loop bandwidth selector (this is seen to be the charge pump, see column 3, lines 37-44) which changes the loop bandwidth according to a control signal. The same applies to claims 4 and 13.

In reference to claim 17, Dent discloses in Figure 6 that the second modulator (120, 121, 122, 124) comprises a filter (124), which is seen to function as the pulse shaping circuit.

***Allowable Subject Matter***

7. Claims 14-16 and 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. Claims 2-3, 5-11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
9. Claim 12 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
10. The following is a statement of reasons for the indication of allowable subject matter: Claims 2, 18, and 19 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 4 further comprising a controller (15) which adjusts a phase error between the first modulator (MD1) and the second modulator (MD2) in combination with the rest of the limitations of the base claims and any

intervening claims. Claim 3 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 4 wherein the loop bandwidth of the loop bandwidth selector (11, 16) is broadened upon input of a signal to activate the phase locked loop, then convergence to a frequency occurs which depends on a constant (CS) representing a carrier frequency, and after a prescribed time, the loop bandwidth narrowed in combination with the rest of the limitations of the base claims and any intervening claims. Claims 5, 7-9, and 14 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 4 wherein the first modulator (MD1) comprises a multiplier (13), a sigma delta circuit (7) and an adder (14) having the claimed connections in combination with the rest of the limitations of the base claims and any intervening claims. Claims 6, 10, and 15 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 11 wherein the first modulator (MD1b) further comprises a digital filter (22), a sigma delta circuit (7), and an adder (14) having the claimed connections in combination with the rest of the limitations of the base claims and any intervening claims. Claim 11 would be allowable because the closest prior art of record fails to disclose a second modulator comprising a digital filter and a digital/analog converter in combination with the rest of the limitations of the base claims and any intervening claims. Claim 12 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 13 wherein the circuit also comprises an amplifier (AMP) and a control circuit to provide a loop bandwidth control signal (CUR) an On/Off signal (PAON), a reference signal (REF), and a baseband signal (TX\_DATA) in combination with the rest of the limitations of the base

claims and any intervening claims. Claim 16 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 7 wherein the circuit further comprises an averaging circuit (20) in combination with the rest of the limitations of the base claims and any intervening claims. Claim 20 would be allowable because the closest prior art of record fails to disclose a circuit as shown in Figure 9 wherein the sigma delta circuit comprises using a plurality of stable sigma delta circuit (DS1, DS2, DS3) which are lower than the second order level to make up a second order or higher-level multi-stage sigma delta circuit to assure stable operation in combination with the rest of the limitations of the base claims and any intervening claims.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cassandra Cox whose telephone number is 571-272-1741. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and on alternate Fridays from 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

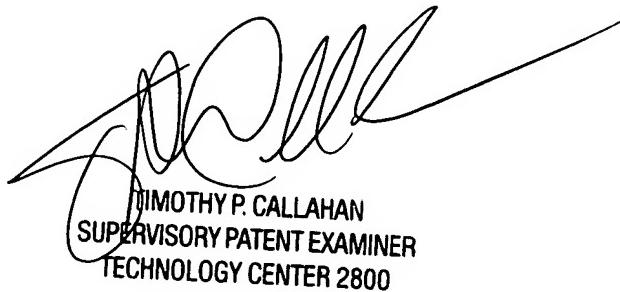
Art Unit: 2816

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CC



February 3, 2005



TIMOTHY P. CALLAHAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800